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ABSTRACT

Reading achievement of elementary school children in California has been measured by several separate studies, not all of which appear to present compatible results. This study of three assessments contained in the Miller-Unruh Report analyzes their purposes, methods, results, and recommendations in an effort to produce some way to arrive at an accurate picture of the reading achievement level in the state. The analyses of assessment studies indicated that inadequacies in methods, discrepancies in data collection, and differences in reporting techniques were largely responsible for the various results. A number of recommendations are made for application in future assessments and for improving reading instruction. These were directed at greater teacher preparedness, fuller understandings of what ought to be measured, more comprehensive and more uniform reporting of subtest scores as well as total test scores across grade levels and school districts, and increased financial support for experimental programs. Tables and references are included. (MS)

READING ACHIEVEMENT IN CALIFORNIA: MIRACLE OR MIRAGE?*

*Testimony Prepared for the Assembly Committee on Education 10/1/70
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READING ACHIEVEMENT IN CALIFORNIA: MIRACLE OR MIRAGE?

"The Right to Read" is a phrase now frequently quoted both at national and state levels. The use of this statement is undoubtedly prompted by the widely quoted statistic that one out of every four students has significant difficulty with reading and up to one-half of the pupils in our large city school systems read below their age and grade level.[1] The use of this phrase has also been used for political purposes by those aspiring to high public office.

Individuals in the State of California have long been concerned with reading achievement. This is evident in the recent efforts resulting from such legislation as the Miller-Unruh Act, providing for special instructional assistance for youngsters encountering reading difficulty at the primary grade level, and also providing for mandatory reading achievement testing for all children in the State of California. Further concern about reading and language education in California is obvious from hearings such as those held by the California Assembly Committee on Education.

However, the questions one must ask are what progress has been made in reading achievement by elementary school children in California during the past several years and what is the prognosis for the future? In order to answer these two key questions it is necessary to respond to five related questions which serve to outline the remainder of this discussion:

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[1] The Role of the Teacher and the Right to Read, Leadership Training Institute, Swarthmore College, Swarthmore, Pa., 1970, p. 1

1. What is the purpose of reading achievement testing?
2. What do the reading test results indicate?
3. What does the test reporting fail to indicate?
4. What factors deserve careful consideration in improving the reading achievement of California's primary grade children?
5. What recommendations may be offered for more effective utilization of state and local resources in enhancing the reading instruction of California's youth?

Purpose of Reading Achievement Testing

According to Dr. James Crandall, one of the basic purposes of reading achievement testing and of the reports put out by the State Department of Education is as follows:

> "The reports have been made so that citizens and educators would have information about pupil achievement to use in strengthening the California public school system."[2]

In the same preface Crandall also states that:

> "The report is intended to provide information that the State Board of Education may find useful in making decisions about statewide educational program priorities, and that the Legislature may find useful in making decisions about allocation of available state resources. It is also intended to supply information that local school districts may use in strengthening existing curriculum and making decisions about the development of new programs for children."[3]

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[2]Dr. James H. Crandall, Chief, Bureau of Evaluation and Instructional Research, CALIFORNIA STATE TESTING PROGRAMS 1968-69. An Analysis of Reading Test Scores and Other School Factors.

[3]Ibid.

Dr. Crandall's initial comments certainly lead one to expect that such information would be of value to a wide range of persons: to legislators who need definitive information for decisions on funding; to state and local administrators as assessment tools for achievement and growth in individual school districts; to teachers needing to assess classroom pupil growth; and to parents wishing to know how their children were progressing in school.

What Do the Reading Results Indicate?

The first document examined was the Shanner Report. At face value, this report establishes the impression that children in California are making tremendous strides in their scores on reading achievement tests.[4]

A major measurement problem in Dr. Shanner's analysis is the fact that a child who simply guessed at the answers in a multiple choice test would produce scores on that test far above the arbitrarily selected lower raw score criterion reference point. For example, by combining two sub-tests (which was the way in which Shanner received the data), the total Stanford Achievement Test, Primary I, has 73 items. The test is multiple choice with four possible choices in each case. Since 25 percent (1 out of 4) times 73 = 18.25, we can assume that even if a child were not able to read, he could guess correctly on approximately 18 items. Dr. Shanner's report cites 75,866 children who scored 20 and below,

[4]Report from Dr. W. M. Shanner (April 8, 1970) to Dr. James Crandall. Subject: Review of Stanford Reading Test Results, California State Testing Program, 1966-69.

and one could assume (since the number of children is so large) that those in the 20 and below category and those in the 10 and below category were probably unable to read the test in the first place.

Dr. Shanner's next analysis was on the Stanford Reading Achievement Test Primary II. Again, this was a multiple choice test with four possible choices for each item. However, this total test, which again combined two sub-tests, contains 96 items. Thus by the same reasoning (25% x 96) one could assume that a child who was unable to read would guess correctly 24 times out of 96. Dr. Shanner cites 56,447 children who scored 20 or below and a total of 123,116 children who scored 30 and below. Thus the number of children who could pass the test purely by guessing at the arbitrarily established level is somewhere in the neighborhood of 80,000 to 90,000.

A third feature of the data which is hazy is that some children are able to do part of the test and then guess at the remainder. Thus there is undoubtedly some element of error in Shanner's remaining criterion points even though it would not be possible to decipher the exact degree.

One of Shanner's major conclusions contained on page 3 of his April 8, 1970, cover letter to Crandall is as follows:

> "Thus, one is getting a 2.59% growth or improvement in pupil performance on the average of each raw score interval in terms of student population. For the four-year interval 1966-69, the value is 5.03%. This to me seems a satisfactory growth record."

This latter statement by Shanner falls into the category of value judgments since what one person feels is satisfactory growth

may appear to a second person to be unsatisfactory growth. However, even if we consider Dr. Shanner's 5% calculated improvement in 4 years as an accurate figure, the question then becomes whether or not this is an extraordinary rate of growth in reading achievement.

To put this in terms of the man on the street, i.e., the mechanic, the salesman, or the assembly line worker in a factory, we might by way of analogy wonder if he or she would think it extraordinary to receive a 5% pay increase after working for 4 years. For example, a person earning $500.00 per month would receive a $25.00 a month raise after four years of work. Thus it seems essential to distinguish between two concepts: that of statistical significance and that of practical significance.

Perhaps a second analogy would clarify this point more fully. When one is dealing with very large numbers (a large sample population) differences which are almost microscopic in nature could be called statistically significant. For example, if a million men were inducted into the armed forces, and they were all measured very carefully, the average height might be 5 feet 9-½ inches. Thus a man who was 5 feet 9-3/4 inches could certainly claim that he was significantly taller than average. However, even if two men (5 feet 9-½ and 5 feet 9-3/4) stood side by side it would probably be impossible to distinguish between them.

A second document examined, the Analysis of the Budget (Summary of State Expenditure for Education) Miller-Unruh Basic Reading Scores, clearly indicates that one or two point increases in raw scores often do not result in any increase whatsoever in grade

equivalency scores. This results from the fact that it often requires an increase of 2 or 3 points in raw scores to be the equivalent of 0.1 of a year in grade equivalent scores. For example, the scores on the following table have been extracted from the above noted document.

In light of the negligible grade equivalency gains shown in the bottom half of the following table, it is difficult to reconcile the actual data with Dr. Max Rafferty's recent statement (Newsmaker, Channel 5, August 21, 1970) that the reading achievement gains of California children are "probably the most significant thing that has happened in California education in the past 20 years."

If one looks closely at the data, it appears quite obvious that it will take California children approximately 12 years to reach the publisher's norms in reading achievement. In addition, this in itself is hypothecated on the presumption that the present upward trend continues at the present rate. Increased financial support and increased allocations for Miller-Unruh teachers and specialists in teaching reading could undoubtedly cut this time lag considerably and thus, regardless of political outcomes or temporary economic declines, we would hope that such support would be forthcoming.

A third document is the Miller-Unruh Report--a document which appears to be large and unwieldy but which contains a great deal of valuable information which has been analyzed and presented in

CALIFORNIA RAW SCORES ON THE STANFORD ACHIEVEMENT TEST

Grade	Lower Quartile (25th)				Median (50th)				Upper Quartile (75th)			
	Publisher's Norm	1966 1967	1967 1968	1968 1969	Publisher's Norm	1966 1967	1967 1968	1968 1969	Publisher's Norm	1966 1967	1967 1968	1968 1969
1	37	22	23	24	47	33	33	35	57	48	48	51
2	37	25	25	26	50	39	40	42	62	57	57	58
3	58	44	45	46	72	62	62	63	81	75	75	76

CALIFORNIA GRADE EQUIVALENCY SCORES ON THE STANFORD ACHIEVEMENT TESTS*

Grade	Lower Quartile (25th)				Median (50th)				Upper Quartile (75th)			
	Publisher's Norm	1966 1967	1967 1968	1968 1969	Publisher's Norm	1966 1967	1967 1968	1968 1969	Publisher's Norm	1966 1967	1967 1968	1968 1969
1	1.7	1.5	1.5	1.5	1.9	1.6	1.6	1.7	2.3	1.9	1.9	2.0
2	2.4	1.9	1.9	1.9	2.9	2.5	2.5	2.6	3.4	3.1	3.1	3.2
3	3.2	2.7	2.7	2.7	3.9	3.4	3.4	3.4	4.7	4.1	4.1	4.2

* Note that no increases in grade equivalency occur for children in the lower quartile. The few .1 year gains occur only for those youngsters at the median and upper quartile.

an easily readable and statistically meaningful manner.[5] The Miller-Unruh Act has quite clearly kept poor readers from falling further and further behind and the report itself states that even though the Miller-Unruh schools (those with a Miller-Unruh reading specialist) have not kept pace with California children as a whole, that caution should be used in interpreting these data because the "children identified for direct assistance from a specialist teacher have been selected for such assistance because they are poor readers."[6]

What Does the Test Reporting Fail to Indicate?

The value of testing information is, of course, directly related to the form in which data are classified, organized, and interpreted. The Crandall Report rank orders each school district on a series of categories such as the (1) index of family poverty, (2) assessed valuation per unit of average daily attendance, and (3) expenditure for instruction per average daily attendance.[7]

The problem, however--and the key ingredient making the data very difficult to use as a basis for decision-making--is that each category has a different number of ranks. In examining the first

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[5]MILLER-UNRUH BASIC READING ACT OF 1965 program report for 1966-1970, and Analysis of Test Scores for May 1968 and May 1969.

[6]All available research points toward the fact that poor readers fall further and further behind in each progressive year. Thus, by preventing this typical type of regression the Miller-Unruh program has indeed performed a valuable service. (See Appendix)

[7]Dr. James H. Crandall, op. cit.

entry on page one (Alameda City Unified), the reader must do a series of calculations to find out where that particular district actually fell in the various rankings and then calculate literally thousands of figures to determine where Alameda City Unified fell in relation to any other school district. In total there are 17 columns containing rankings and Alameda's entries are as follows: 116 out of 301, 71 out of 144, 93 out of 232, 78 out of 160, 437 out of 804, 164 out of 422, 5 out of 52, 8 out of 32, 817 out of 1076, 265 out of 1061, 20 out of 257, 49 out of 381, 17 out of 76, 81 out of 162, 84 out of 197, 332 out of 419, and 3 out of 49. Thus, as the data now stand, the appearance is simply that of an IBM print-out sheet which should be subjected to analysis rather than anything even resembling an analysis in itself.

The most logical approach--and certainly the one most usable not only for the layman but also for educators, researchers and others concerned with education--would be to convert the data into equivalent rankings with one (1) being high and one hundred (100) being low. This is simply a question of running the card punched data through the proper computer program, and presumbaly the data are already in card punched form.[8]

In looking at the far right-hand corner of page one of the Crandall Report, the reader will note the heading Median Reading Test Raw Scores, and this in turn is broken down into grades one,

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[8]The reason for some of the categories having such large ranks such as 1076 and 1061 is that the analyst apparently felt it essential to calculate the data to the closest cent rather than the closest ten cents or the closest dollar.

two, and three. However, no indication is given that the grade one test actually contains 73 items whereas the tests for grades two and three contain 96 items. This could easily mislead the reader into thinking that the raw scores are comparable from grade to grade and even if he were not misled, he would have to determine where his district fell in relation to any other. Needless to say, the data could easily have been converted into percentages (by IBM equipment) but as they now stand they are totally unusable.

A third major problem in using the Crandall Report is that two separate tests contained in the Stanford Achievement Test have been grouped together. The test as given in the classroom is broken down into Word Meaning which gives an indication of the child's word knowledge, and Paragraph Meaning which gives an indication of the child's ability to comprehend the meaning of entire paragraphs. However, as a result of combining these two tests into one score, a school district would be unable to decipher whether or not the major problems revolved around Word Meaning or Paragraph Meaning.

To some degree the foregoing criticism about combining scores may appear to be water over the dam since California is shifting to the Cooperative Primary Test (ETS). However, there are three distinct reading-related parts of the Cooperative Primary Test which are separately scored and it is highly recommended that each part be made mandatory throughout the state and be reported as separate scores. In the Cooperative Primary Test these three items consist of:

1. Reading--which encompasses word meaning, sentence meaning and paragraph meaning comprehension;

2. Word Analysis--which centers on phonics; and
3. Listening--which enables one to obtain an indication of the child's word meaning, sentence meaning and paragraph meaning comprehension abilities without requiring the child to use word attack skills, e.g., phonics, to read words.

Factors Leading to Improvement of Reading Achievement

Reading is an extremely complex process. Successful reading is not a simple matter of having a child subscribe to a "phonics" or "whole word" approach. And in point of fact such a simplistic viewpoint is refuted by the massive twenty-year targeted research and development effort sponsored by the U.S. Office of Education. The basic objective of the above-noted project is to define the nature of the reading process and to develop programs leading to successful reading achievement.[9]

Although there is a significant body of research to support the value of a strong word attack emphasis in reading instruction, this represents only one essential component of a successful reading program.[10] Certainly the importance of building comprehension

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[9]William J. Gephart, "The Targeted Research and Development Program on Reading," Reading Research Quarterly, Vol. V, No. 4, Summer 1970, pp. 505-532.

[10]Russell G. Stauffer (editor), The First Grade Reading Studies: Findings of Individual Investigations, International Reading Association, Newark, 1967.

Guy L. Bond and Robert Dykstra, Coordinating Center for First-Grade Reading Instruction Programs, U.S. Dept. of Health, Education, and Welfare, Final Report, Project No. X-001, Contract No. OE-5-10-264.

abilities cannot be underestimated. In addition, positive attitudes toward the reading act are of great importance if the reader is to use his reading skills to any advantage. The recent adoption of state reading texts offers a range of emphasis on word attack skills from the Bank Street material, which resembles the previous state adoption in word attack pacing (Allyn-Bacon, Ginn) through Harper-Row and Macmillan to the Lippincott series, which increases the pacing of word attack skill development, e.g., phonics. There is also an emphasis on comprehension in each of these programs even though in many respects it is very similar to the previous state adopted programs. The use of supplementary materials such as the Holt, Rinehart and Winston series (Sounds of Language) should produce more positive attitudes toward reading and language learning.

Despite the fact that there is a range of reading programs available in California, it is important to understand that the very research which supports an emphasis on word attack skill and comprehension development also indicates that more variation in reading achievement exists between teachers than between reading programs.[11] In other words, the critical agent of change in reading instruction is not only found in reading programs possessing certain instructional characteristics--but more importantly in the teacher. This appropriately calls for a shift in emphasis from finding the "magic" text to preparing the efficient teacher.

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[11]Stauffer, Bond and Dykstra, op. cit.

In addition to the foregoing, we must carefully examine the limited time and support given to the preparation of reading language teachers at the college and university level. The thirty clock hours devoted to preservice teacher training in reading at the University of California at Berkeley, for example, provides time to do little more than overview fundamentals. Such programs not only need larger blocks of instructional time but also need to consider undergraduate course preparation in reading related disciplines (see later comments on Miller-Unruh teacher preparation). Programs of reading instruction at the college and university level must also reexamine the location of the instructional setting and move outward into the community to teach reading methods courses in the schools where direct contact with children can be frequently developed.

Inservice training programs in reading and language instruction in school districts also need to be reexamined with support from state department personnel. Teachers are often presented with inservice training which may be described at best as a "shotgun" approach. Consistent and ongoing teacher training centers in reading instruction are rare and must be established in school districts. These centers must be staffed with highly skilled professionals who plan for intensive inservice work in reading and language instruction.

Special inservice programs are essential for the Miller-Unruh reading teachers if the stated objectives of "prevention of reading disabilities and the correction of reading disabilities at the

earliest possible time in the educational career of the pupil" (California Education Code, Section 5771) are to be achieved. The present and frequently used option of recommending a Miller-Unruh teacher at the local school level and then certifying the teacher on the basis of a written examination on reading instruction is at best an ineffective approach to developing highly competent reading specialists. The present system of granting credentials for the Miller-Unruh teachers must be reexamined and provision made for formal training as a reading specialist. Such training should include the following:

1. Formal work in diagnosis and remediation of reading difficulties;
2. Instruction in children's literature;
3. Study of basic language concepts, including implications for understanding children's reading and language growth and development (linguistics, psycholinguistics, etc.);
4. Study of the relationship between the oral language system and the written language system of English (linguistics);
5. Examination of syntactical elements which produce distinct meaning changes within and across sentences (linguistics, psycholinguistics);
6. Study of concept development and thinking strategies (psychology, psycholinguistics);
7. Study of socio-ethnic variables and school-community relationships (sociology, social psychology, sociolinguistics);
8. Study and understanding of dialect differences which will be of significant value in reading and language instruction

for teachers and children (particularly low socio-economic Black, white and Chicano youngsters) speaking standard and nonstandard English respectively (sociolinguistics).[12]

It is imperative that as much information as possible be available to the reading teacher in the classroom. By providing evaluation instruments which assess word meaning, paragraph meaning (reading and listening comprehension) and word attack skills the nature of the child's reading difficulty can more easily be identified. For example, a low score on paragraph meaning may indicate that the child is weak in comprehending language. On the other hand, it may merely indicate that the child is unable to pronounce the printed words in order to utilize his comprehension ability. Thus, by utilizing information on comprehension and word attack the teacher can more readily discern the nature of the child's problem, using this information in conjunction with his own individual diagnostic techniques to focus on the specific nature of the child's problem in comprehension or word attack skill. In this manner the state achievement testing program can serve as a group screening device valuable to classroom instruction. Such information would also be of value at the state and local administrative level in more accurately assessing the value of reading programs.

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[12]It is not unusual, for example, to find that a teacher has diagnosed the oral reading of a nonstandard speaking Black youngster as poor oral reading when in fact the youngster is translating consistently and correctly in his own dialect.

Recommendations for Enhancing Reading Achievement of California's Primary School Children

Although the maximum raw score increase of one to three points which occurred in several instances represents a statistically significant increase in reading achievement, this increase represents only a 0.1 year grade equivalency gain. This occurred in five instances in grades one through three and was always at the fiftieth and seventy-fifth percentile. Thus the great majority of raw score increases, although statistically significant, are of little practical significance in terms of meaningful reading growth. A school administrator or curriculum director, for example, would be extremely reluctant to expend large sums of money on a totally different reading program in order to increase reading achievement by 0.1 of a year even if this occurred at all levels, which was not the case in the California test data.

The job of developing educational programs leading to achievement gains is an extremely difficult effort. Thus it is of paramount importance that support be marshalled at federal, state and local levels if progress in reading achievement is to be made. The nature of this support is suggested below.

The following recommendations are based on the foregoing analysis of the documents described:

1. That the statewide testing programs report separate test scores for each sub-test on reading comprehension, word meaning, word study skills, and listening. This should facilitate the interpretation and use of testing information

not only in program planning at the state level, but it should also aid the classroom teacher in using test results for instructional purposes within the classroom by identifying strong and weak areas of the reading program, i.e., comprehension and word attack skills.

2. That the test scores be reported not only in raw scores but also in terms of grade equivalents. The latter reporting technique would be much more easily interpreted by the average citizen, and it appears to be essential since ease of interpretation is stated to be a major objective of the state testing program (see earlier quote from Dr. Crandall's report).
3. That test results be reported in such a manner that variations on such important factors as socio-economic status, intelligence, and beginning reading level are broken out separately in order to make valid comparisons between comparable schools.
4. That any rank order type of data reporting be standardized on a 1-to-100 scale so that it may be easily comprehended by the typical reader.
5. That the State Department of Education focus its emphasis on the teacher and on inservice teacher training programs with less emphasis on text materials; and that the state provide consistent and continuing emphasis on inservice training of reading teachers. (College and university departments should also be encouraged to provide leadership in this effort.)

6. That colleges and universities with the support of the State Department of Education focus its efforts in preparing teachers of reading and reading specialists by:
   a. Devoting more time to reading and language diagnosis and instruction;
   b. Moving methods courses into the public schools to provide the student teacher with children who may be used in instructional programs rather than having these courses remote from the actual primary grade classrooms;
   c. Including related courses in the undergraduate preparation program for potential student teachers, e.g., linguistics, psychology, as related to special learning problems of the culturally different child, and methodology of reading instruction.
7. That Miller-Unruh reading teachers receive special preparation as reading specialists. This should include courses in diagnosis and remediation of reading difficulties, and courses related to the unique problems of culturally different youth, e.g., non-standard dialects, concept development, attitudes toward learning, etc. This would best be accomplished by providing stipends to teachers for attending specialized summer and inservice courses.
8. The Miller-Unruh state department staff should be expanded from two staff members to the number required for effective operation in implementing the legislation.

9. That special model reading experimental schools be established to explore and formulate new teaching techniques and approaches in order to better match pupil learning styles with instructional approaches. Such a model school should recruit outstanding reading teachers and provide for detailed observation of the instructional approaches used. Such experimental schools should be established in areas of California representing a wide range or socio-economic and ethnic groups of primary grade children.
10. That financial support be provided for:
    a. Meaningful test analysis and interpretation;
    b. State department leadership for inservice training of classroom teachers and Miller-Unruh teachers;
    c. Local district inservice training of classroom teachers and Miller-Unruh teachers, and expansion of state department Miller-Unruh personnel;
    d. College and university courses in reading instruction designed to support inservice teacher training for both classroom teachers and Miller-Unruh teachers; and
    e. Establishing model reading experimental schools to explore and formulate new reading techniques and approaches.

Vita

Dr. Robert B. Ruddell is Associate Professor of Education at the University of California at Berkeley. His educational background includes: B.A., West Virginia University; M.A., West Virginia University and George Peabody College of Teachers; Ed.D., Indiana University (major--Reading and Language Development, minor--Linguistics and Psychology). Dr. Ruddell's professional experience ranges from one-room and consolidated-school teaching to teaching at the college and university level. His professional activities include membership on the Commission on High Quality Teaching of the International Reading Association and the Commission on English Curriculum of the National Council of Teachers of English, serving as reading-language consultant to school districts, and extensive research publication on reading and children's language. Research on reading-language instruction is one of Dr. Ruddell's major interests. His recent research has dealt with linguistic factors related to beginning reading instruction.

Arthur C. Williams is presently a Research Analyst, designing new evaluation instruments for reading and language arts. His educational background includes: B.A., Economics, University of California, Berkeley; M.A., Economics, University of California, Berkeley. His professional experience includes one year's experience in economic consulting; two years of experience in technical writing and editing; and eight years' experience on Dr. Walter Loban's longitudinal research project dealing with the growth and development of children's language, with his main research functions on that project being statistical and graphic presentation and writing the drafts of various monographs.

APPENDIX*

READING ACHIEVEMENT SCORES USING THE STANFORD AND CALIFORNIA TESTS OF READING ACHIEVEMENT

Number of Months Reading Age is Above or Below Chronological Age (Mean)

Grade	High Group (N=35)	Low Group (N=35)	Central Group[1]	Total Group[1]
4	+23.52	-19.33	+0.65	+3.14
5	+32.22	-20.08	+4.24	+5.64
6	+36.20	-24.12	+4.37	+5.45
7	+33.07	-32.41	+1.31	+1.19
8	+25.57	-32.63	-0.68	-1.08

[1]

	4	5	6	7	8
Central Group N =	145	149	142	122	101
Total Group N =	188	206	198	177	141

* Data calculated by Arthur Williams on the longitudinal research of Walter Loban. See unpublished report to U.S. Office of Education: Language Ability: Grades 10, 11 and 12, August, 1967.